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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,332	04/24/2001	David John Bishop	54-90-20-65	5973

7590 10/20/2004
Peter V. D. Wilde
301 East Landing
Williamsburg, VA 23185

EXAMINER

LESTER, EVELYN A

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/841,332	BISHOP ET AL.	
	Examiner	Art Unit	
	Evelyn A. Lester	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6,7 and 9-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6,7 and 9-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


EVELYN LESTER
PRIMARY EXAMINER

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 4, 6, 7, 10, 11, 13 and 18 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Guckel et al (U.S. patent 4,203,128).

Guckel et al discloses the claimed invention of an electrooptic modulator as evident in Figures 5-7 and their accompanying text, as well as noted at column 1, lines 12-19 and 33-43; col. 2, lines 33-38; col. 4, lines 4-12 and 48-51; col. 5, lines 16-22; col. 7, lines 39-65; col. 12, lines 20-24; and with respect to claim 13, note col. 3, lines 35-60 and col.9, line 55 to col. 11, line 52.

Specifically with respect to claims 1, 10 and 18, Guckel et al's invention comprises an electrically conductive substrate (620 ; col. 7, lines 52-55), a movable membrane having a top surface and a bottom surface, comprised of a single crystal silicon (or monocrystalline silicon) layer (650; and for example, col. 1, lines 12-14, and col. 7, lines 43-44), a support (630) for positioning the movable membrane at a first position spaced from the substrate by an air gap(640), means for applying an electrical bias across the air gap to move the movable membrane from a first position to a second position (note leads in Figure 6; also col. 7, lines 52-55).

With respect to the use of specifically a laser as a light source, Guckel et al discloses membrane dimensions which are inherent to the use of a laser as the incoming radiation source. Plus, a laser inherently provides better control over the operating parameters of the device, which is the intent of Guckel et al.

With respect to claim 2, note at column 7, lines 39-65.

With respect to claim 4, note at column 11, line 11.

With respect to claims 6, 7 and 11, note at column 7, line 44.

With respect to claim 13, please note at column 3, lines 35-60, and also at column 9, line 55 to column 11, line 52.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4, 6, 7 and 9-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goossen (U.S. patent 5,943,155) in view of Neukermans et al (U.S. patent 5,629,790).

Goossen discloses the claimed invention of an electrooptic modulator as evident in Figures 1-3 and Figures 7-13, and their accompanying text, wherein Goossen's invention has an electrically conductive substrate(31; col. 4, line 37); a movable membrane having a top surface and a bottom surface(32); a support for positioning the

movable membrane at a first position spaced from the substrate by an air gap(34); a means for applying an electrical bias across the air gap to move the movable membrane from a first position to a second position (i.e. electrical lead indicated in the Figures). Goossen does not teach the use of a single crystal silicon for the movable membrane.

However, it would have been obvious to one of ordinary skill in the electrooptic modulator art to provide the single crystal silicon material as the movable membrane in Goossen's invention because at the time of the invention, single crystal silicon material was known to have superior characteristics over polysilicon, as taught by Neukermans et al. Neukermans et al explicitly teach that the movable membrane element of the electrooptic modulator is single crystal silicon because of its superior strength and fatigue characteristics, as compared to metals or polysilicon. Note Neukermans et al at column 5, lines 5-8. Therefore, to provide the single crystal silicon material of Neukermans et al's invention for the movable membrane in Goossen's invention would have been obvious to one of ordinary skill in the art in order to improve the stability and strength of the electrooptic modulator, as taught by Neukermans et al. By improving the stability and strength of the electrooptic modulator, there is provided a reduction in maintenance costs, as well as reducing the inconvenience and time lost for replacing a damaged device too often.

With respect to the manufacturing method claims, note Goossen at Figures 7-13 and their accompanying text, and the above reasons for rejection.

Response to Arguments

3. Applicant's arguments filed 5-17-04 have been fully considered but they are not persuasive.

4. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the invention specifically being a MARS device or that the light beam can be switched between a reflecting state and an anti-reflecting state) is not recited in the rejected claim(s). The claimed invention recites a broader scope of invention, that of "electro-optic devices," and requires, as claimed, to cause a change in the amount of light reflected from the movable membrane. Guckel et al 's invention so performs this limitation as described in the above rejection. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, it is irrelevant whether the reference includes the argued features or not.

Further, the law of anticipation requires that a distinction be made between the invention described or taught and the invention claimed. It does not require that the reference "teach" what the subject patent teaches. Assuming that a reference is properly "prior art," it is only necessary that the claims under consideration "read on" something disclosed in the reference, i.e., all limitations of the claim are found in the reference, or "fully met" by it. Heretofore, claim 1 does not recite the limitations of original claims 3 and 8 as indicated in the Applicant's remarks, page 7. It is apparent the Applicant intended to incorporate the limitations of cancelled claims 3 and 8 into

independent claim 1, but there is no evidence of that actually occurring. Therefore, claim 1 as presented, has been found unpatentable over the prior art.

It has been held that the mere fact that the references relied on by the Patent and Trademark Office fail to evince an appreciation of the problem identified and solved by applicant is not, standing alone, conclusive evidence of the nonobviousness of the claimed subject matter. The references may suggest doing what an applicant has done even though workers in the art were ignorant of the existence of the problem.

With respect to Applicant's arguments regarding the rejection based on Goosen in view of Neukermans et al, the mirror membrane of the claimed invention is not recited as having electrical properties. Therefore, it is considered irrelevant that Neukermans et al does not teach such a characteristic. However, it should be noted that when known materials are taught, one of ordinary skill in the art of electro-optics would be aware of those materials' properties and characteristics, such as being electrical or not. With respect to the mechanical properties, Neukermans is quite clear that single crystal silicon is preferred both for its superior strength and fatigue characteristics. It almost goes without saying that one of ordinary skill in the art of electro-optics would attribute these characteristics as highly favorable to a mirror membrane device. Note MPEP 2141.01(a).

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP


§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evelyn A. Lester whose telephone number is (571) 272-2332. The examiner can normally be reached M- F, from about 10 am to 7 pm, subject to an increased flex schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Evelyn A. Lester
Primary Examiner
Art Unit 2873